

tested and certified by a Marine Chemist or a U.S. Coast Guard authorized person as "Safe for Hot Work":

(i) Within, on, or immediately adjacent to spaces that contain or have contained combustible or flammable liquids or gases.

(ii) Within, on, or immediately adjacent to fuel tanks that contain or have last contained fuel; and

(iii) On pipelines, heating coils, pump fittings or other accessories connected to spaces that contain or have last contained fuel.

(iv) Exception: On dry cargo, miscellaneous and passenger vessels and in the landside operations within spaces which meet the standards for oxygen, flammability and toxicity in §1915.12, but are adjacent to spaces containing flammable gases or liquids, as long as the gases or liquids have a flash point below 150 °F (65.6 °C) and the distance between such spaces and the work is 25 feet (7.5m) or greater."

NOTE: For flammable liquids with flash points above 150 °F (65.6 °C), see paragraph (b) of this section.

NOTE TO PARAGRAPH (A)(1): The criteria for safe for hot work is located in the definition section of subpart B.

(2) The certificate issued by the Marine Chemist or Coast Guard authorized person shall be posted in the immediate vicinity of the affected operations while they are in progress and kept on file for a period of at least three months from the date of the completion of the operation for which the certificate was generated.

(b) *Hot work requiring testing by a competent person.* (1) Hot work is not permitted in or on the following spaces or adjacent spaces or other dangerous atmospheres until they have been tested by a competent person and determined to contain no concentrations of flammable vapors equal to or greater than 10 percent of the lower explosive limit:

(i) Dry cargo holds,

(ii) The bilges,

(iii) The engine room and boiler spaces for which a Marine Chemist or a Coast Guard authorized person certificate is not required under paragraph (a)(1)(i) of this section, and

(iv) Vessels and vessel sections for which a Marine Chemist or Coast

Guard authorized person certificate is not required under paragraph (a)(1)(i) of this section, and

(v) Land-side confined and enclosed spaces or other dangerous atmospheres not covered by paragraph (a)(1) of this section.

(2) If the concentration of flammable vapors or gases is equal to or greater than 10 percent of the lower explosive limit in the space or an adjacent space where the hot work is to be done, then the space shall be labeled "Not Safe for Hot Work" and ventilation shall be provided at volumes and flow rates sufficient to ensure that the concentration of flammable vapors or gases is below 10 percent by volume of the lower explosive limit. The warning label may be removed when the concentration of flammable vapors and gases are below 10 percent lower explosive limit.

NOTE TO §1915.14: See appendix A for additional information relevant to performing hot work safely.

[59 FR 37857, July 25, 1994, as amended at 60 FR 14219, Mar. 16, 1995]

§1915.15 Maintenance of safe conditions.

(a) *Preventing hazardous materials from entering.* Pipelines that could carry hazardous materials into spaces that have been certified "Safe for Workers" or "Safe for Hot Work" shall be disconnected, blanked off, or otherwise blocked by a positive method to prevent hazardous materials from being discharged into the space.

(b) *Alteration of existing conditions.* When a change that could alter conditions within a tested confined or enclosed space or other dangerous atmosphere occurs, work in the affected space or area shall be stopped. Work may not be resumed until the affected space or area is visually inspected and retested and found to comply with §§1915.12, 1915.13, and 1915.14 of this part, as applicable.

NOTE TO PARAGRAPH (B): Examples of changes that would warrant the stoppage of work include: The opening of manholes or other closures or the adjusting of a valve regulating the flow of hazardous materials.

(c) *Tests to maintain the conditions of a Marine Chemist's or Coast Guard authorized person's certificates.* A competent

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person shall visually inspect and test each space certified as "Safe for Workers" or "Safe for Hot Work," as often as necessary to ensure that atmospheric conditions within that space is maintained within the conditions established by the certificate after the certificate has been issued.

(d) *Change in the conditions of a Marine Chemist's or Coast Guard authorized person's certificate.* If a competent person finds that the atmospheric conditions within a certified space fail to meet the applicable requirements of §§1915.12, 1915.13, and 1915.14 of this part, work in the certified space shall be stopped and may not be resumed until the space has been retested by a Marine Chemist or Coast Guard authorized person and a new certificate issued in accordance with §1915.14(a).

(e) Tests to maintain a competent person's findings. After a competent person has conducted a visual inspection and tests required in §§1915.12, 1915.13, and 1915.14 of this part and determined a space to be safe for an employee to enter, he or she shall continue to test and visually inspect spaces as often as necessary to ensure that the required atmospheric conditions within the tested space are maintained."

(f) *Changes in conditions determined by competent person's findings.* After the competent person has determined initially that a space is safe for an employee to enter and he or she finds subsequently that the conditions within the tested space fail to meet the requirements of §§1915.12, 1915.13, and 1915.14, of this part, as applicable, work shall be stopped until the conditions in the tested space are corrected to comply with §§1915.12, 1915.13, and 1915.14, as applicable.

[59 FR 37857, July 25, 1994, as amended at 60 FR 14219, Mar. 16, 1995]

§ 1915.16 Warning signs and labels.

(a) *Employee comprehension of signs and labels.* The Employer shall ensure that each sign or label posted to comply with the requirements of this subpart is presented in a manner that can be perceived and understood by all employees.

(b) *Posting of large work areas.* A warning sign or label required by para-

graph (a) of this section need not be posted at an individual tank, compartment or work space within a work area if the entire work area has been tested and certified: not safe for workers, not safe for hot work, and if the sign or label to this effect is posted conspicuously at each means of access to the work area.

APPENDIX A TO SUBPART B—COMPLIANCE ASSISTANCE GUIDELINES FOR CONFINED AND ENCLOSED SPACES AND OTHER DANGEROUS ATMOSPHERES

This appendix is a non-mandatory set of guidelines provided to assist employers in complying with the requirements of this subpart. This appendix neither creates additional obligations nor detracts from obligations otherwise contained in the standard. It is intended to provide explanatory information and educational material to employers and employees to foster understanding of, and compliance with, the standard.

Sections 1915.11 through 1915.16. These standards are minimum safety standards for entering and working safely in vessel tanks and compartments.

Section 1915.11(b) Definition of "Hot work." There are several instances in which circumstances do not necessitate that grinding, drilling, abrasive blasting be regarded as hot work. Some examples are:

1. Abrasive blasting of the hull for paint preparation does not necessitate pumping and cleaning the tanks of a vessel.
2. Prior to hot work on any hollow structure, the void space should be tested and appropriate precautions taken.

Section 1915.11(b) Definition of "Lower explosive limit." The terms lower flammable limit (LFL) and lower explosive limit (LEL) are used interchangeably in fire science literature.

Section 1915.11(b) Definition of "Upper explosive limit." The terms upper flammable limit (UFL) and upper explosive limit (UEL) are used interchangeably in fire science literature.

Section 1915.12(a)(4). After a tank has been properly washed and ventilated, the tank should contain 20.8 percent oxygen by volume. This is the same amount found in our normal atmosphere at sea level. However, it is possible that the oxygen content will be lower. When this is the case, the reasons for this deficiency should be determined and corrective action taken.

An oxygen content of 19.5 percent can support life and is adequate for entry. However, any oxygen level less than 20.8 percent and greater than 19.5 percent level should also alert the competent person to look for the